

August 16, 2012

Mr. Tom Gainer
Oregon Department of Environmental Quality
2020 SW Fourth Avenue, Suite 400
Portland, OR 97201-4987

**Subject: Terminal 4 Slip 1 Upland Facility
 Pier 1 Stockpile Reuse Project
 ECSI No. 2356**

Dear Tom:

This letter presents a proposed beneficial re-use plan for soil stockpiled at the Terminal 4 Slip 1 Upland Facility (the Facility). The proposed reuse project is to use the stockpile of soil material as fill to raise grade in the former grain tank areas located on the Facility. A Facility location map is provided on Figure 1; a Facility plan is provided on Figure 2, showing the location of the soil stockpiles and former grain tank area. The Feasibility Study (FS; Ash Creek, 2011a) prepared for the Facility identified several of the soil stockpiles as an area of concern because of polycyclic aromatic hydrocarbons (PAHs) in the soil at concentrations that exceeded risk screening criteria and had some potential for unacceptable risk if not managed or otherwise addressed.

Regulatory Status

The Port of Portland (Port) is under a Voluntary Cleanup Program (VCP) Agreement (dated December 4, 2003) with the Oregon Department of Environmental Quality (DEQ) for Remedial Investigation (RI), Source Control Measures, and Feasibility Study (FS) at the Facility. The RI and subsequent follow-up sampling showed that PAHs were present in soil at several locations including soil stockpiles northeast of Slip 1. The risk assessment completed as part of the RI concluded that the presence of PAHs in soil will not present an unacceptable risk to potential current human receptors at the Facility based on the current limited use of these areas, but there is the potential for unacceptable future risk to occupational workers if the Facility is redeveloped for typical industrial use. The FS report (Ash Creek, 2011a), approved by DEQ on November 23, 2011, identified Institutional Controls with Future Redevelopment as the preferred alternative for remediation of the Facility.

Soil Stockpile Institutional Controls

Institutional controls for areas of the Facility identified in the FS include limiting site access to authorized personnel only and implementation of a soil management plan (SMP). The Facility is fenced and access is through a gated entrance manned full-time by security personnel. The SMP for these areas identifies appropriate activities for redevelopment if this occurs in the future, appropriate soil-handling during construction, protective measures for construction activities, and inspection/maintenance requirements. For example, redevelopment will include one or more of soil excavation, filling, paving, or building construction. These elements serve to reduce potential risk by either removing the soil with PAHs or preventing contact by occupational workers with a cover. The appropriate soil management is based on the relevant criteria, which is primarily:

- Occupational Exposure: DEQ risk-based concentrations (RBCs) from the Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites (RBC Table Revised June 7, 2012; DEQ, 2003).
- JSCS: DEQ/EPA, 2005. Portland Harbor Joint Source Control Strategy (JSCS) – Final (Table 3-1 Updated July 16, 2007). December 2005.

Soil Stockpile Characterization

Historical development projects at Terminal 4 generated a soil stockpile that currently contains approximately 24,000 cubic yards of soil. The stockpile area is located northeast of Slip 1 and encompasses an area of approximately 150 by 500 feet. Based on the origin of the soil, the stockpile was divided into three zones that are each discussed below.

Western Pile. The western pile comprises the western approximately 250 feet of the stockpile. This soil originated from the development of the Terminal 4 Automobile Storage Area (ASA) buildings and utilities. The pile is 10 to 12 feet high and contains approximately 8,400 cubic yards. Before material was excavated for the ASA development, an asphalt-concrete surface was removed using a grinder. Some of the asphaltic material is currently present on the surface of the western pile.

The western pile was sampled in November 2006 and again in June 2011 using random samples based on a grid-cell approach (Ash Creek, 2011b). Five samples were collected in 2006 and 10 samples were collected in 2011. Samples were analyzed for total petroleum hydrocarbons (TPH) and PAHs. Table 1 lists the western pile soil data. The data were screened against criteria for DEQ occupational RBCs and DEQ/EPA Portland Harbor JSCS.

Three of 15 samples exceeded the DEQ occupational RBC for benzo(a)pyrene (BAP) and the same three samples exceeded the JSCS screening levels for several PAHs. The data were statistically evaluated for the 90 percent upper confidence limit of the mean (90%UCL) with results listed in Table 2. BAP exceeded the DEQ occupational RBC and TPH and four PAHs exceeded the JSCS screening levels. Based on these results, the western pile may be re-used on-site provided that the soil is placed greater than 100 feet from storm water catch basins, or if the area is redeveloped, the soil is covered with suitable material (e.g., soil, pavement, or a building).

Eastern Pile. The eastern pile comprises the lower portion of the eastern approximately 400 feet of the stockpile. It originated from historical excavation of the ASA riverbank to improve slope stability and greenscape.

The eastern pile was sampled in November 2006 using the same process as used for the western pile (Ash Creek, 2011b). Table 3 lists the eastern pile soil data. The results of the sampling in 2006 indicate none of the five samples exceeded the occupational RBC or JSCS SLs. Based on these results, the eastern pile is not restricted for use on-site.

Pier 2 North and South. The Pier 2 stockpiles were placed on top of the eastern pile along the northern and southern pile edges. This soil was generated during completion of the Pier 2 rail yard project. The piles are approximately 9 feet high (above the eastern pile) and contain 1,580 cubic yards for the north pile and 3,110 cubic yards for the south pile, based on a Port survey.

The Pier 2 piles were sampled in June 2011 using the same process as used for the western pile (Ash Creek, 2011b). Table 4 lists the Pier 2 soil data. The data were screened against occupational RBCs and JSCS SLs.

One of 10 samples exceeded the occupational RBC for BAP and the JSCS SL for two PAHs. The data were statistically evaluated for the 90%UCL with results listed in Table 5. BAP exceeded the occupational RBC and indeno(1,2,3-cd)pyrene exceeded the SL (by factors of 1.4 and 1.9, respectively). Based on these results, the Pier 2 piles may be re-used on-site provided that the soil is placed greater than 100 feet from storm water catch basins, or if the area is redeveloped, the soil is covered with suitable material (e.g., soil, pavement, or a building). However, the statistical evaluation of the soil was heavily skewed by one high result. Given the relatively low exceedance ratios, it is possible that additional sampling could demonstrate that this soil would not exceed the occupational RBCs or the JSCS SLs. The Port is not proposing additional sampling for this stockpile reuse project.

Proposed Beneficial Use of the Soil Stockpile

Attachment A presents the drawings showing the proposed beneficial use of the soil stockpile. The soil will be moved approximately 700 feet to the northwest to fill a low area targeted for

future redevelopment. The proposed fill area is the former location of grain storage tanks demolished in 2008. The attached drawings include a grading plan, cross-sections, and erosion control plan. The proposed project has the following elements:

- Soil material from the Western pile and Pier 2 North and South piles will be used as subgrade fill material only. This material is labeled as Type B (restricted) fill material in the attached drawings.
- Soil material from the Eastern pile will be placed as surface cover material (minimum of 12 inches) over the entire proposed fill area. It will also be used as subgrade fill for the western portion of the area. This material is labeled as Type A (unrestricted) fill material in the attached drawings.
- Both the stockpile and proposed fill area will be surrounded by silt fence.
- Storm drains no longer needed will be cut and plugged.
- Storm drain inlets to be maintained will be protected from sedimentation by inlet fabric inserts and bio-bags.

Re-use of the soil stockpile as proposed will meet the re-use criteria because (1) the soil exceeding occupational RBCs and JSCS screening levels will be placed as subsurface fill only in a location that is not currently developed nor currently used by the Port or a tenant and covered with a minimum of 12 inches of suitable material; and (2) the location of the soil exceeding these screening levels will be documented and continue to be under institutional controls in the form of a soil management plan.

Please call me at (503) 415-6676 if you have any questions.

Sincerely,



Kelly Madalinski
Environmental Program Manager

ATTACHMENTS

Table 1 – Analytical Results – Western Pile
Table 2 – Mean Concentrations (90% Upper Confidence Limit) – Western Pile
Table 3 – Analytical Results – Eastern Pile
Table 4 – Analytical Results – Pier 2 Piles
Table 5 – Mean Concentrations (90% Upper Confidence Limit) – Pier 2 Pile
Figure 1 – Facility Location Map
Figure 2 – Facility Plan
Attachment A – Engineering Drawings

REFERENCES

Ash Creek Associates, 2011a. Revised Upland Feasibility Study, Terminal 4 Slip 1 Upland Facility, Portland, Oregon. August 18, 2011.

Ash Creek Associates, 2011b. Letter to D. Breen, Port of Portland, Stockpile Sampling Results, Port of Portland Terminal 4 Slip 1. July 18, 2011.

DEQ, 2003. Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites (RBC Spreadsheet updated June 7, 2012). September 22, 2003.

DEQ/EPA, 2005. Portland Harbor Joint Source Control Strategy – Final (Table 3-1 Updated July 16, 2007). December 2005.

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Table 1
Analytical Results - Western Pile
Terminal 4, Slip 1 Pier 1 Stockpile Reuse Project
Portland, Oregon

			TPH		PAHs																	
Sample ID	Date Sampled	Depth	TPH-d	TPH-o	1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(ghi)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
(feet bgs)			(mg/kg)		(µg/kg)																	
Pile A-32	11/29/2006	1-2	<15.1	65.3	--	--	<159	<159	<159	194	179	173	<159	<159	334	<159	908	<159	<159	<159	<159	955
Pile A-37	11/29/2006	1-2	<14.6	116	--	--	<773	<773	<773	934	1,290	<773	911	869	1290	<773	1,660	<773	<773	<773	<773	2200
Pile A-60	11/29/2006	1-2	<113	640	--	--	<72.4	<72.4	<72.4	<72.4	145	115	158	89.8	114	<72.4	<72.4	<72.4	95.8	<72.4	<72.4	46.7
Pile A-64	11/29/2006	1-2	<14.1	<28.1	--	--	<29.6	<29.6	<29.6	<29.6	69.3	44.9	97.9	46.8	44.4	<29.6	<29.6	<29.6	62.9	<29.6	<29.6	32.1
Pile A-79	11/29/2006	1-2	<14.8	115	--	--	<62.2	<62.2	<62.2	<62.2	124	81.2	128	84.3	92.9	<62.2	71.5	<62.2	86.5	<62.2	<62.2	101
W-1(4.5)	6/3/2011	4.5	58.4	582	13.8	28.9	19	25.3	15.8	72.4	133	108	103	55.5	92.5	16.5	80.2	12.2	73.8	76.5	68.3	106
W-2(4.5)	6/3/2011	4.5	<16.5	<65.8	13.9	18.5	<7.2	<7.2	17.5	58.5	86.4	86.4	75.8	32.5	60.6	15.3	77.7	<7.2	53.1	19.9	32.8	80.8
W-3(4.5)	6/3/2011	4.5	<19.1	<76.5	<8.2	<8.2	<8.2	<8.2	<8.2	13.0	32.3	29.1	33.2	11.9	21.2	<8.2	17.4	<8.2	20.5	10.2	9.4	22.3
W-4(4.5)	6/3/2011	4.5	<17.8	193	23.6	21.8	475	78.9	1,310	2,210	900	1,740	300	712	2,710	152	5,130	628	300	14.5	3,500	3,460
W-5 (4.5)	6/3/2011	4.5	110	1,370	<7.3	<7.3	<7.3	<7.3	<7.3	28.8	48.1	63.0	33.3	33.3	65.8	8.6	38.6	<7.3	22.5	<7.3	16.6	54.4
W-6(4.5)	6/3/2011	4.5	40.8	700	<7.5	<7.5	<7.5	10.7	9.4	67.5	116	125	101	40.0	98.1	23.4	79.1	<7.5	71.7	19.9	36.9	102
W-7(4.5)	6/3/2011	4.5	<18.8	99.1	<8.0	18.2	8.9	58.9	43.7	247	450	362	322	177	300	58	361	<8.0	246	63.1	75.6	512
W-8(4.0)	6/3/2011	4.0	19.2	324	<7.5	9.9	<7.5	11.2	17.8	69.7	90.2	87.9	99.7	55.2	81.3	20.1	95.9	8.8	65.6	32.3	43.2	105
W-9(4.5)	6/3/2011	4.5	29.1	435	10.1	22.8	7.6	24.7	14.3	83.3	160	140	131	65.6	107	23.8	99.9	<7.6	96.5	70.7	62.7	130
W-10(4.5)	6/3/2011	4.5	<17.9	274	<7.7	<7.7	<7.7	9.6	7.8	30.5	51.4	52.9	52.6	28.2	43.5	8.7	41.6	<7.7	33.2	11.7	19.2	51.2
DEQ Screening Levels																						
Occupational - Direct Contact			14,000	36,000	--	--	61,000,000	--	310,000,000	2,700	270	2,700	--	27,000	250,000	270	29,000,000	41,000,000	2,700	23,000	--	21,000,000
JSCS Soil/Stormwater Sediment			--	--	--	200	300	200	845	1,050	1,450	--	300	13,000	1,290	1,300	2,230	536	100	561	1,170	1,520

Notes:

1. TPH = Total petroleum hydrocarbons by Northwest Method NW TPH-Dx.
2. mg/kg = milligram per kilogram (ppm).
3. PAHs = Polycyclic aromatic hydrocarbons by EPA Method 8270SIM.
4. µg/kg = microgram per kilogram (ppb).
5. < = Not detected at or above the indicated method reporting limit.
6. Highlighted values exceed the Oregon Department of Environmental Quality (DEQ) Risk-Based Concentration (RBC) for direct contact in an Occupational Scenario.
7. DEQ RBCs from: Oregon Department of Environmental Quality's *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites. September 22, 2003 (RBC Spreadsheet updated June 7, 2012).*
8. JSCS = DEQ/EPA, 2005. Portland Harbor Joint Source Control Strategy – Final (Table 3-1 Updated July 16, 2007). December 2005.
9. -- = Not analyzed or not available.
10. Boxed values exceed the JSCS SLs.
11. Bold denotes detected concentrations.

Table 2
Mean Concentrations (90% Upper Confidence Limit) - Western Pile
Terminal 4, Slip 1 Pier 1 Stockpile Reuse Project
Portland, Oregon

Analyte	Mean (90% UCL)	Units	RBC	JSCS	Method ²
Acenaphthene	92	µg/kg	61,000,000	300	90% KM (t) UCL
Anthracene	660	µg/kg	310,000,000	845	97.5% KM (Chebyshev) UCL
Benzo(a)anthracene	940	µg/kg	2,700	1,050	95% KM (Chebyshev) UCL
Benzo(a)pyrene	540	µg/kg	270	1,450	90% Chebyshev(Mean, Sd) UCL
Benzo(g,h,i)perylene	350	µg/kg	--	300	90% KM (Chebyshev) UCL
Chrysene	920	µg/kg	250,000	1,290	95% KM (Chebyshev) UCL
Fluoranthene	2700	µg/kg	29,000,000	2,230	97.5% KM (Chebyshev) UCL
Fluorene	350	µg/kg	41,000,000	536	97.5% KM (Chebyshev) UCL
Indeno(1,2,3-cd)pyrene	120	µg/kg	2,700	100	90% KM (BCA) UCL
Phenanthrene	1700	µg/kg	--	1,170	97.5% KM (Chebyshev) UCL
Pyrene	1300	µg/kg	21,000,000	1,520	90% Chebyshev(Mean, Sd) UCL

Notes:

1. UCL = Upper Confidence Limit of the Mean.
2. Methods were determined by using the approach recommended by ProUCL v. 4.1 at the 95% confidence level.
3. mg/kg = milligram per kilogram (ppm).
4. µg/kg = microgram per kilogram (ppb).
5. < = Not detected at or above the indicated method reporting limit.
6. Highlighted values exceed the Oregon Department of Environmental Quality (DEQ) Risk-Based Concentration (RBC) for direct contact in an Occupational Scenario.
7. DEQ RBCs from: Oregon Department of Environmental Quality's *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites. September 22, 2003 (RBC Spreadsheet updated June 7, 2012)*.
8. JSCS = DEQ/EPA, 2005. Portland Harbor Joint Source Control Strategy – Final (Table 3-1 Updated July 16, 2007). December 2005.
9. -- = Not available.
10. Boxed values exceed the JSCS SLs.

Table 3
Analytical Results - Eastern Pile
Terminal 4, Slip 1 Pier 1 Stockpile Reuse Project
Portland, Oregon

			TPH		PAHs																	
Sample ID	Date Sampled	Depth	TPH-d	TPH-o	1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
(feet bgs)			(mg/kg)		(µg/kg)																	
Pile A-20	11/29/2006	1-2	<13.4	<26.8	--	--	<14.5	<14.5	<14.5	<14.5	15.5	<14.5	17.1	<14.5	<14.5	<14.5	<14.5	<14.5	<14.5	<14.5	<14.5	<14.5
Pile A-43	11/29/2006	1-2	<14	<28	--	--	<14.8	<14.8	<14.8	<14.8	<14.8	<14.8	<14.8	<14.8	<14.8	<14.8	<14.8	<14.8	<14.8	<14.8	<14.8	<14.8
Pile A-49	11/29/2006	1-2	<13.5	<27	--	--	<14.7	<14.7	<14.7	<14.7	<14.7	<14.7	<14.7	<14.7	<14.7	<14.7	<14.7	<14.7	<14.7	<14.7	<14.7	<14.7
Pile A-86	11/29/2006	1-2	<13.2	<26.4	--	--	<14.3	<14.3	<14.3	17.2	32.2	21.6	31.8	23.5	24	<14.3	21.8	<14.3	22.2	<14.3	<14.3	103
Pile A-97	11/29/2006	1-2	<13.4	<26.7	--	--	<14.6	<14.6	<14.6	17.7	39.2	27.3	44.8	28.8	25.1	<14.6	19.8	<14.6	31.6	<14.6	<14.6	31.8
					DEQ Screening Levels																	
Occupational - Direct Contact			14,000	36,000	--	--	61,000,000	--	310,000,000	2,700	270	2,700	--	27,000	250,000	270	29,000,000	41,000,000	2,700	23,000	--	21,000,000
JSCS Soil/Stormwater Sediment			--	--	--	200	300	200	845	1,050	1,450	--	300	13,000	1,290	1,300	2,230	536	100	561	1,170	1,520

Notes:

1. TPH = Total petroleum hydrocarbons by Northwest Method NW TPH-Dx.
2. mg/kg = milligram per kilogram (ppm).
3. PAHs = Polycyclic aromatic hydrocarbons by EPA Method 8270SIM.
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8. JSCS = DEQ/EPA, 2005. Portland Harbor Joint Source Control Strategy – Final (Table 3-1 Updated July 16, 2007). December 2005.
9. -- = Not analyzed or not available.
10. Boxed values exceed the JSCS SLs.
11. **Bold** denotes detected concentrations.

Table 4
Analytical Results - Pier 2 Piles
Terminal 4, Slip 1 Pier 1 Stockpile Reuse Project
Portland, Oregon

				TPH		PAHs																	
	Sample ID	Date	Depth (feet bgs)	TPH-d	TPH-o	1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
				(mg/kg)	(µg/kg)																		
Pier 2 North	P2-N-1(4.5)	6/3/2011	4.5	<16.1	<64.4	<7.3	<7.3	<7.3	10.2	<7.3	19.9	49.4	41.5	37.2	23.1	25.4	<7.3	20.4	<7.3	27.0	<7.3	<7.3	28.5
	P2-N-2(4.5)	6/3/2011	4.5	<16.8	<67.1	<7.3	<7.3	<7.3	<7.3	<7.3	13.0	26.4	21.9	35.2	11.5	16.0	<7.3	13.2	<7.3	19.6	<7.3	<7.3	19.6
	P2-N-3(4.5)	6/3/2011	4.5	<18.0	<72.0	<7.8	<7.8	<7.8	<7.8	<7.8	14.7	31.1	27.1	27.0	14.2	17.9	<7.8	15.8	<7.8	17.0	<7.8	<7.8	20.1
	P2-N-4(4.5)	6/3/2011	4.5	19.2	198	11.3	16.6	67.1	11.1	85.8	696	899	1,110	456	476	660	133	823	28.7	436	19.6	343	791
	P2-N-5(4.5)	6/3/2011	4.5	<17.1	<68.6	<7.2	<7.2	<7.2	<7.2	<7.2	12.5	25.4	22.8	108	9.4	17	18	13.5	<7.2	74.5	<7.2	<7.2	19
	P2-N-6(4.5)	6/3/2011	4.5	<16.6	<66.2	<7.2	<7.2	<7.2	11.4	<7.2	30.4	57.5	48.5	46.4	27.0	32.5	7.9	30.7	<7.2	32.3	<7.2	9.3	39.7
Pier 2 South	P2-S-7(4.0)	6/3/2011	4.0	<17.2	<68.7	<7.3	<7.3	<7.3	15.1	<7.3	38.1	70.6	57.8	40.7	32.0	41.0	<7.3	35.3	<7.3	30.8	<7.3	8.0	53.4
	P2-S-8(4.0)	6/3/2011	4.0	<16.6	<66.5	<7.1	<7.1	<7.1	<7.1	<7.1	16.3	31.4	26.3	26.5	14.1	19.0	<7.1	13.8	<7.1	17.9	<7.1	<7.1	21.5
	P2-S-9(4.0)	6/3/2011	4.0	<16.3	<65.3	<7.1	<7.1	<7.1	<7.1	<7.1	8.0	16.7	15.6	17.2	<7.1	8.7	<7.1	7.8	<7.1	9.6	<7.1	<7.1	10.1
	P2-S-10(4.0)	6/3/2011	4.0	<16.8	<67.4	<7.2	<7.2	<7.2	<7.2	<7.2	12.3	22.6	19.6	28.5	8.7	13.3	<7.2	12.5	<7.2	15.2	<7.2	<7.2	16.2
DEQ Screening Levels																							
Occupational - Direct Contact				14,000	36,000	--	--	61,000,000	--	310,000,000	2,700	270	2,700	--	27,000	250,000	270	29,000,000	41,000,000	2,700	23,000	--	21,000,000
JSCS Soil/Stormwater Sediment Criteria				--	--	--	200	300	200	845	1,050	1,450	--	300	13,000	1,290	1,300	2,230	536	100	561	1,170	1,520

Notes:

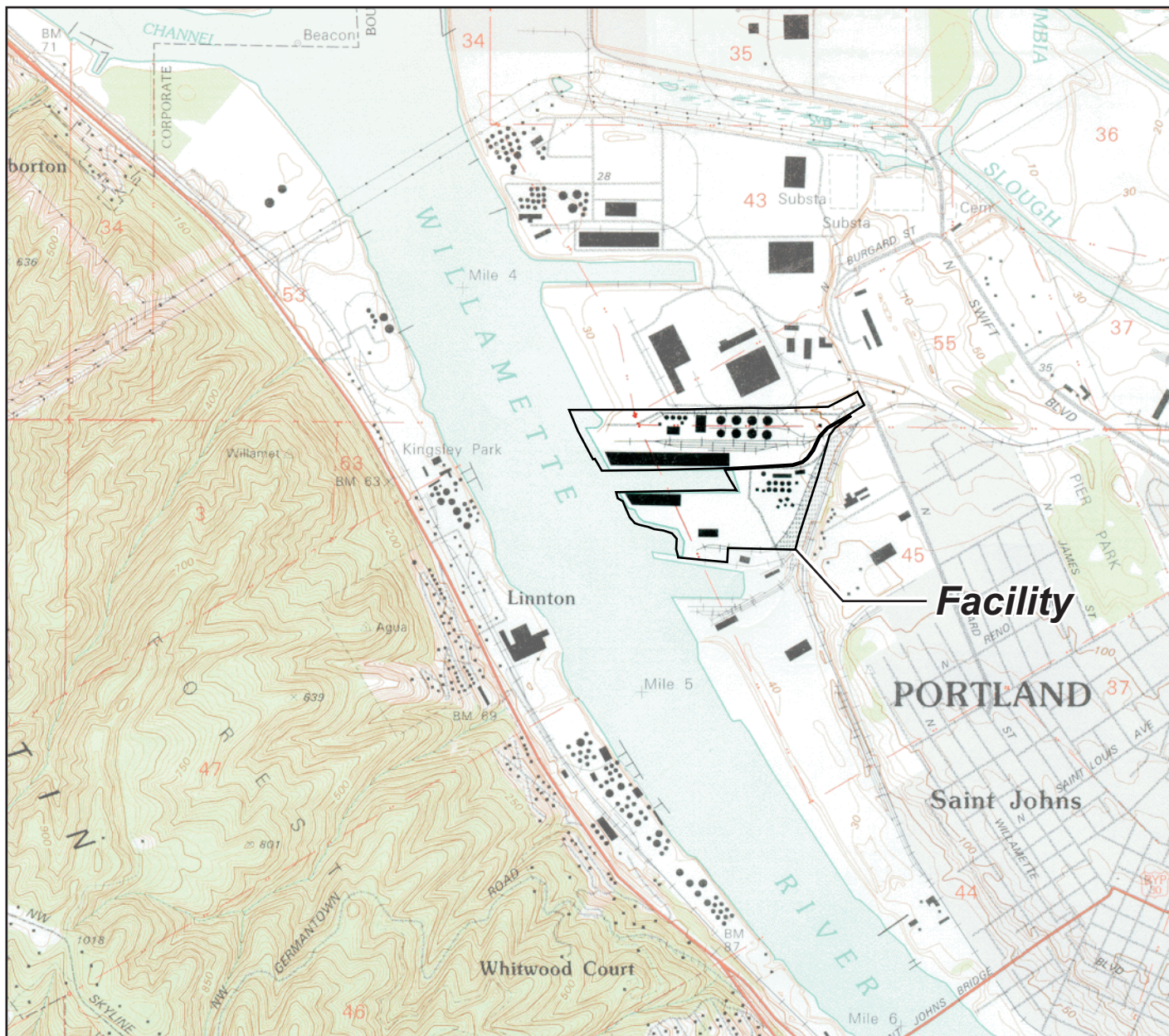
1. TPH = Total petroleum hydrocarbons by Northwest Method NW TPH-Dx.
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9. -- = Not analyzed or not available.
10. Boxed values exceed the JSCS SLs.
11. **Bold** denotes detected concentrations.

Table 5
Mean Concentrations (90% Upper Confidence Limit) - Pier 2 Pile
Terminal 4, Slip 1 Pier 1 Stockpile Reuse Project
Portland, Oregon

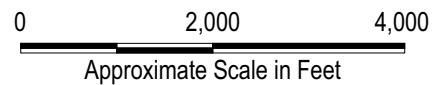
Analyte	Mean (90% UCL)	Units	RBC	JSCS	Method ²
Benzo(a)pyrene	380	µg/kg	270	1,450	90% Chebyshev(Mean, Sd) UCL
Benzo(g,h,i)perylene	210	µg/kg	--	300	90% Chebyshev(Mean, Sd) UCL
Indeno(1,2,3-cd)pyrene	190	µg/kg	2,700	100	90% Chebyshev(Mean, Sd) UCL

Notes:

1. UCL = Upper Confidence Limit of the Mean.
2. Methods were determined by using the approach recommended by ProUCL v. 4.1 at the 95% confidence level.
3. mg/kg = milligram per kilogram (ppm).
4. µg/kg = microgram per kilogram (ppb).
5. < = Not detected at or above the indicated method reporting limit.
6. Highlighted values exceed the Oregon Department of Environmental Quality (DEQ) Risk-Based Concentration (RBC) for direct contact in an Occupational Scenario.
7. DEQ RBCs from: Oregon Department of Environmental Quality's *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites. September 22, 2003 (RBC Spreadsheet updated June 7, 2012).*
8. JSCS = DEQ/EPA, 2005. Portland Harbor Joint Source Control Strategy – Final (Table 3-1 Updated July 16, 2007). December 2005.
9. -- = Not analyzed or not available.
10. Boxed values exceed the JSCS SLs.



Note: Base map prepared from the USGS 7.5-minute quadrangle of Linnton, Oregon, dated 1990.



Facility Location Map

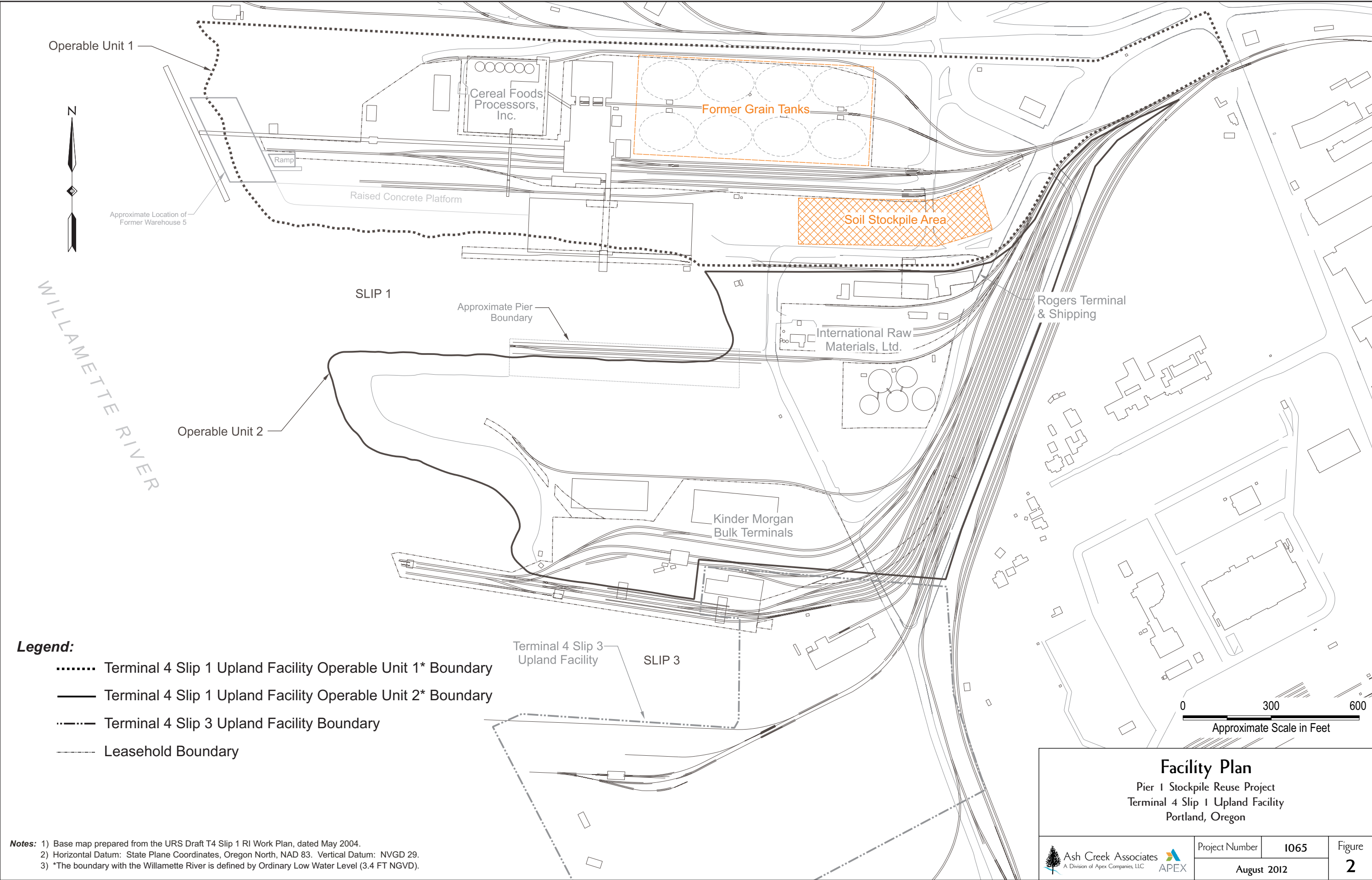
Pier 1 Stockpile Reuse Project
Terminal 4 Slip 1 Upland Facility
Portland, Oregon

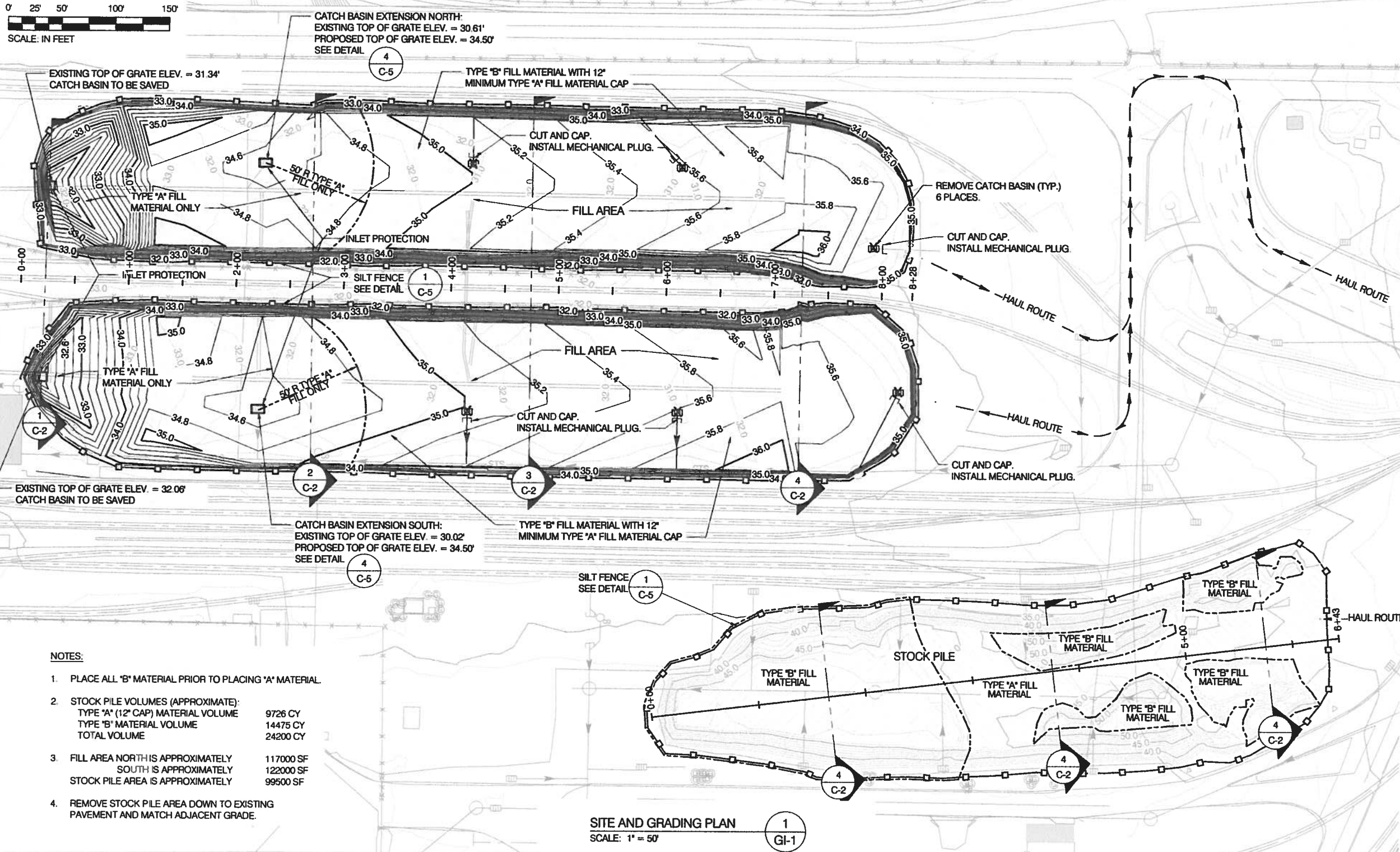
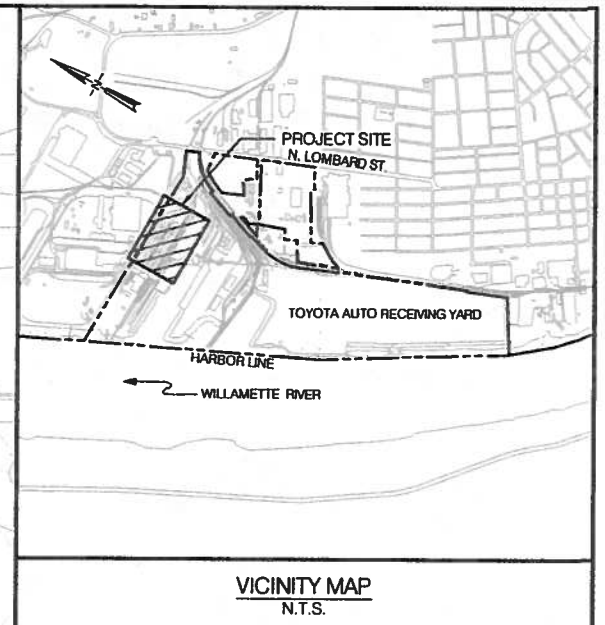
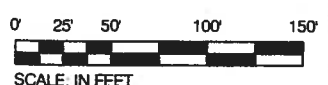
 **Ash Creek Associates**
A Division of Apex Companies, LLC 

Project Number	1065
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August 2012








Figure
1





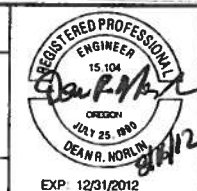
- NOTES:**
1. PLACE ALL "B" MATERIAL PRIOR TO PLACING "A" MATERIAL
 2. STOCK PILE VOLUMES (APPROXIMATE):
TYPE "A" (12" CAP) MATERIAL VOLUME 9726 CY
TYPE "B" MATERIAL VOLUME 14475 CY
TOTAL VOLUME 24200 CY
 3. FILL AREA NORTH IS APPROXIMATELY 117000 SF
SOUTH IS APPROXIMATELY 122000 SF
STOCK PILE AREA IS APPROXIMATELY 99500 SF
 4. REMOVE STOCK PILE AREA DOWN TO EXISTING PAVEMENT AND MATCH ADJACENT GRADE.

LEGEND:

	PROPOSED MAJOR CONTOUR ELEVATION
	PROPOSED MINOR CONTOUR ELEVATION
	EXISTING MAJOR CONTOUR ELEVATION
	EXISTING MINOR CONTOUR ELEVATION
	TYPE "B" (RESTRICTED) FILL MATERIAL AREA
	TYPE "A" (UNRESTRICTED) FILL MATERIAL AREA
	SOIL TYPE DELINEATION

[illegible]

PORT OF PORTLAND
PORTLAND, OREGON



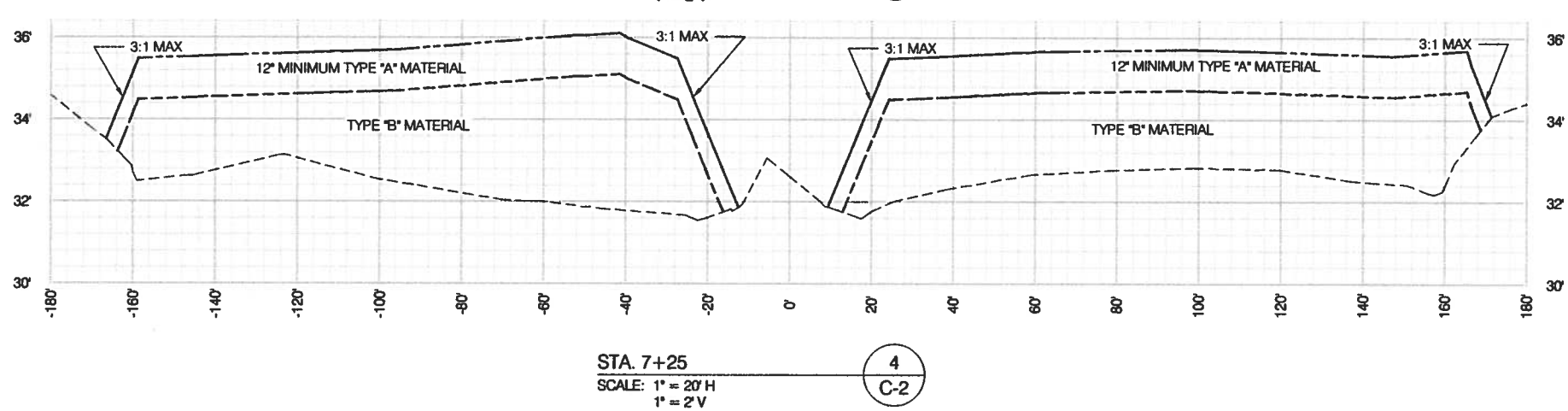
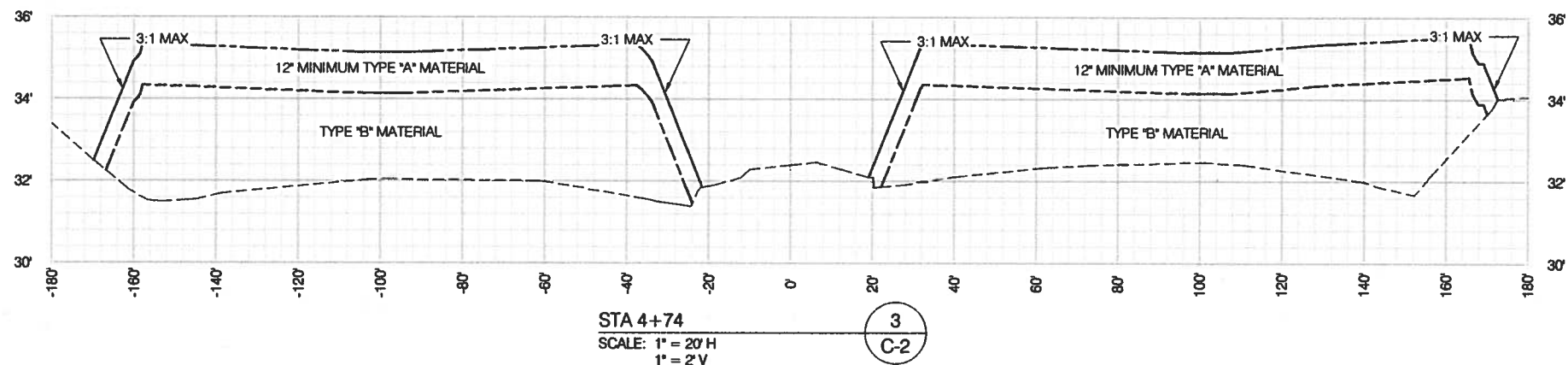
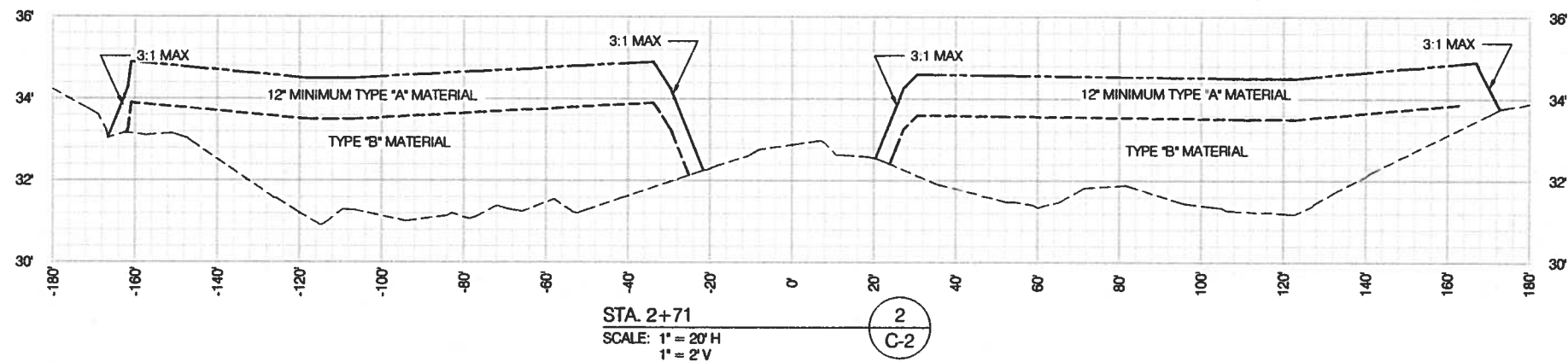
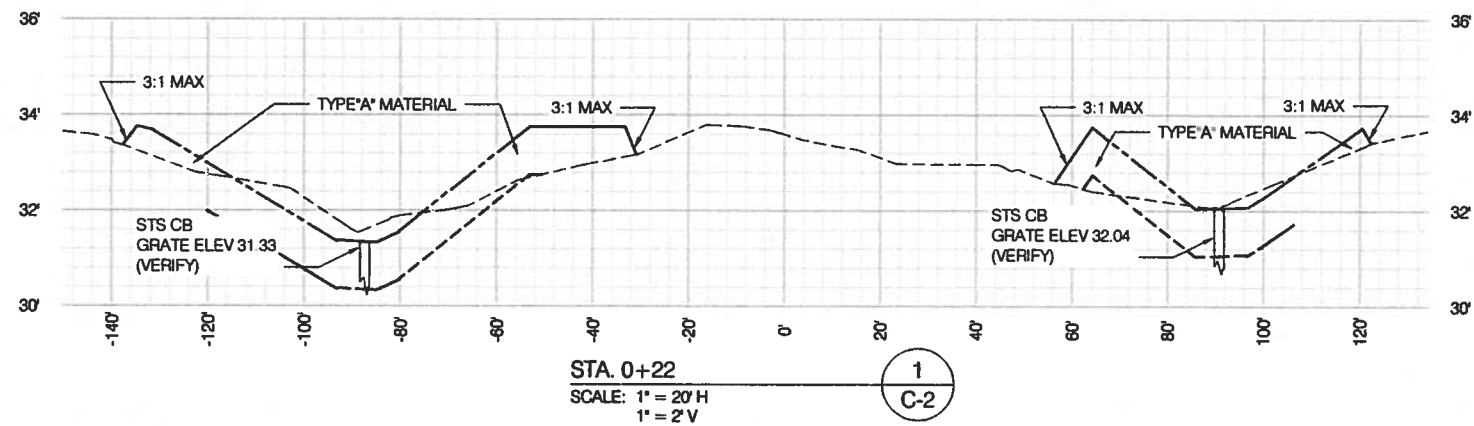
DESIGNED BY D. NORLIN
DRAWN BY C. BIELANSKI
CHECKED BY D. BREEN
DATE 06/19/2012
SCALE 1" = 50'

TERMINAL 4

PIER 1 SITE PREPARATION
SITE AND GRADING PLAN

SUBMITTED BY
DEAN NORLIN
PROJECT ENGINEER

TYPE	DRAWING NO.		
PC	T4 2012-4	1/5	(C-1)



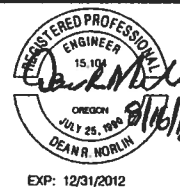
LEGEND:

- PROPOSED FINISHED GRADE (12" MINIMUM UNRESTRICTED MATERIAL)
- - - PROPOSED SUBSURFACE GRADE (RESTRICTED MATERIAL)
- - - EXISTING GRADE

NO	DATE	BY	REVISIONS	CKD	APPVD	NO	DATE	BY	REVISIONS	CKD	APPVD



PORT OF PORTLAND
PORTLAND, OREGON



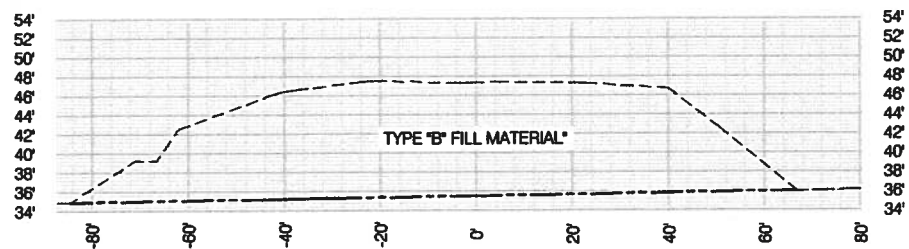
DESIGNED BY: D. NORLIN
DRAWN BY: C. BIELANSKI
CHECKED BY: D. GREEN
DATE: 06/19/2012
SCALE: 1" = 20' HORIZ. / 1" = 2' VERT

TERMINAL 4
PIER 1 SITE PREPARATION
PROPOSED GRADING SECTIONS

SUBMITTED BY: DEAN NORLIN
PROJECT ENGINEER

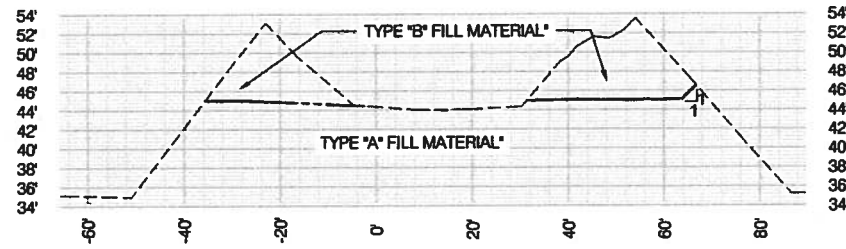
TYPE: PC
DRAWING NO: T4 2012-4

2/5 (C-2)



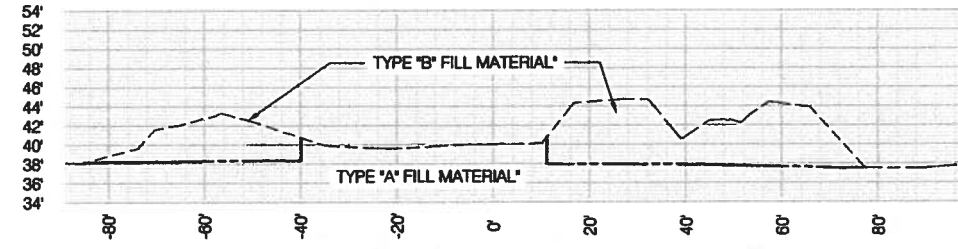
STA. 1+65
SCALE: 1" = 20' H
1" = 10' V

1
C-3



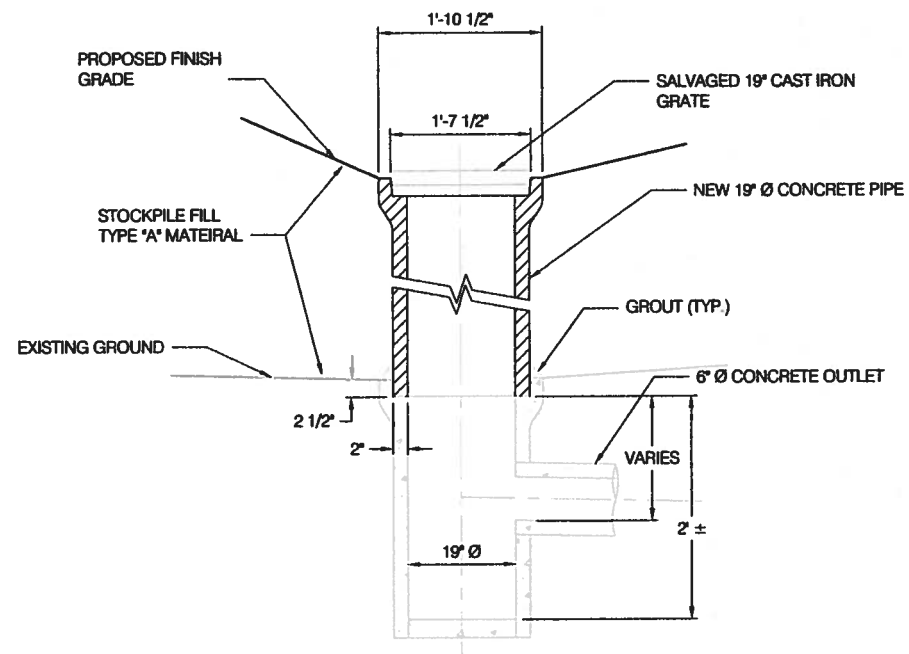
STA. 3+75
SCALE: 1" = 20' H
1" = 10' V

2
C-3



STA. 5+75
SCALE: 1" = 20' H
1" = 10' V

3
C-3



STORM GRATE
ADJUSTMENT DETAIL - ELEVATION
SCALE: NTS

4
C-3

LEGEND:

----- EXISTING GRADE
----- SOIL TYPE DELINEATION

PORT OF PORTLAND
PORTLAND, OREGON



DESIGNED BY: D. NORLIN
DRAWN BY: C. BIELANSKI
CHECKED BY: D. BREEN
DATE: 06/19/2012
SCALE: 1" = 20' HORIZ / 1" = 10' VERT

TERMINAL 4

PIER 1 SITE PREPARATION
EXISTING SAND PILE SECTIONS AND
STORM ADJUSTMENT DETAILS

SUBMITTED BY: DEAN NORLIN
PROJECT ENGINEER

TYPE: PC
DRAWING NO: T4 2012-4

3/5 (C-3)

08/15/12 CPB SHEET REISSUED FOR C.O.P. PERMIT

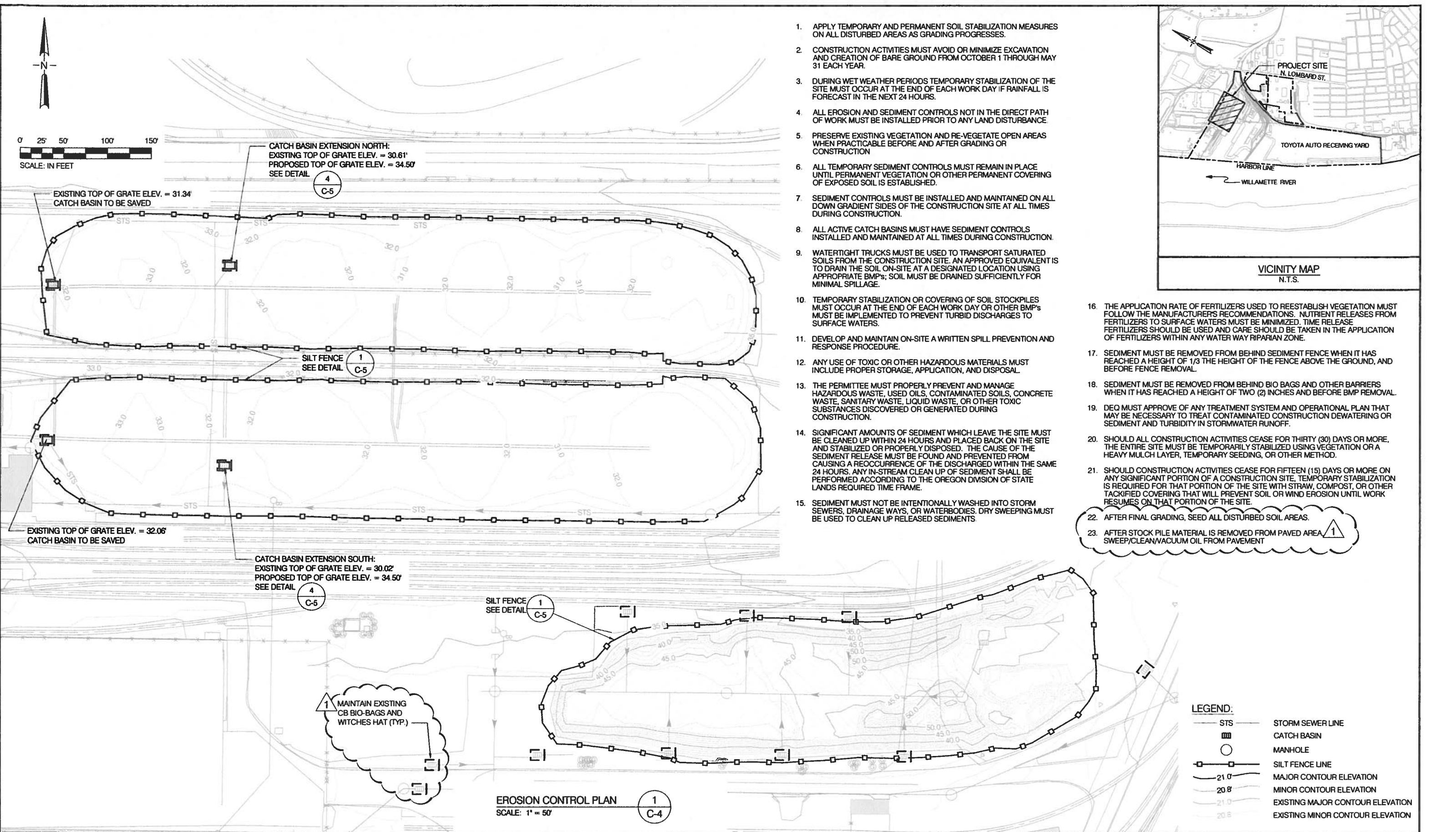
NO	DATE	BY	REVISIONS	CKD	APPVD	NO	DATE	BY	REVISIONS	CKD	APPVD



20120021
DESIGN NUMBER

101739
PROJECT NUMBER

EXP: 12/31/2012



1. APPLY TEMPORARY AND PERMANENT SOIL STABILIZATION MEASURES ON ALL DISTURBED AREAS AS GRADING PROGRESSES.
2. CONSTRUCTION ACTIVITIES MUST AVOID OR MINIMIZE EXCAVATION AND CREATION OF BARE GROUND FROM OCTOBER 1 THROUGH MAY 31 EACH YEAR.
3. DURING WET WEATHER PERIODS TEMPORARY STABILIZATION OF THE SITE MUST OCCUR AT THE END OF EACH WORK DAY IF RAINFALL IS FORECAST IN THE NEXT 24 HOURS.
4. ALL EROSION AND SEDIMENT CONTROLS NOT IN THE DIRECT PATH OF WORK MUST BE INSTALLED PRIOR TO ANY LAND DISTURBANCE
5. PRESERVE EXISTING VEGETATION AND RE-VEGETATE OPEN AREAS WHEN PRACTICABLE BEFORE AND AFTER GRADING OR CONSTRUCTION
6. ALL TEMPORARY SEDIMENT CONTROLS MUST REMAIN IN PLACE UNTIL PERMANENT VEGETATION OR OTHER PERMANENT COVERING OF EXPOSED SOIL IS ESTABLISHED.
7. SEDIMENT CONTROLS MUST BE INSTALLED AND MAINTAINED ON ALL DOWN GRADIENT SIDES OF THE CONSTRUCTION SITE AT ALL TIMES DURING CONSTRUCTION.
8. ALL ACTIVE CATCH BASINS MUST HAVE SEDIMENT CONTROLS INSTALLED AND MAINTAINED AT ALL TIMES DURING CONSTRUCTION.
9. WATERTIGHT TRUCKS MUST BE USED TO TRANSPORT SATURATED SOILS FROM THE CONSTRUCTION SITE. AN APPROVED EQUIVALENT IS TO DRAIN THE SOIL ON-SITE AT A DESIGNATED LOCATION USING APPROPRIATE BMP's; SOIL MUST BE DRAINED SUFFICIENTLY FOR MINIMAL SPILLAGE.
10. TEMPORARY STABILIZATION OR COVERING OF SOIL STOCKPILES MUST OCCUR AT THE END OF EACH WORK DAY OR OTHER BMP's MUST BE IMPLEMENTED TO PREVENT TURBID DISCHARGES TO SURFACE WATERS.
11. DEVELOP AND MAINTAIN ON-SITE A WRITTEN SPILL PREVENTION AND RESPONSE PROCEDURE.
12. ANY USE OF TOXIC OR OTHER HAZARDOUS MATERIALS MUST INCLUDE PROPER STORAGE, APPLICATION, AND DISPOSAL.
13. THE PERMITTEE MUST PROPERLY PREVENT AND MANAGE HAZARDOUS WASTE, USED OILS, CONTAMINATED SOILS, CONCRETE WASTE, SANITARY WASTE, LIQUID WASTE, OR OTHER TOXIC SUBSTANCES DISCOVERED OR GENERATED DURING CONSTRUCTION.
14. SIGNIFICANT AMOUNTS OF SEDIMENT WHICH LEAVE THE SITE MUST BE CLEANED UP WITHIN 24 HOURS AND PLACED BACK ON THE SITE AND STABILIZED OR PROPERLY DISPOSED. THE CAUSE OF THE SEDIMENT RELEASE MUST BE FOUND AND PREVENTED FROM CAUSING A REOCCURRENCE OF THE DISCHARGED WITHIN THE SAME 24 HOURS. ANY IN-STREAM CLEAN UP OF SEDIMENT SHALL BE PERFORMED ACCORDING TO THE OREGON DIVISION OF STATE LANDS REQUIRED TIME FRAME.
15. SEDIMENT MUST NOT BE INTENTIONALLY WASHED INTO STORM SEWERS, DRAINAGE WAYS, OR WATERBODIES. DRY SWEEPING MUST BE USED TO CLEAN UP RELEASED SEDIMENTS

16. THE APPLICATION RATE OF FERTILIZERS USED TO REESTABLISH VEGETATION MUST FOLLOW THE MANUFACTURERS RECOMMENDATIONS. NUTRIENT RELEASES FROM FERTILIZERS TO SURFACE WATERS MUST BE MINIMIZED. TIME RELEASE FERTILIZERS SHOULD BE USED AND CARE SHOULD BE TAKEN IN THE APPLICATION OF FERTILIZERS WITHIN ANY WATER WAY RIPARIAN ZONE.
17. SEDIMENT MUST BE REMOVED FROM BEHIND SEDIMENT FENCE WHEN IT HAS REACHED A HEIGHT OF 1/3 THE HEIGHT OF THE FENCE ABOVE THE GROUND, AND BEFORE FENCE REMOVAL.
18. SEDIMENT MUST BE REMOVED FROM BEHIND BIO BAGS AND OTHER BARRIERS WHEN IT HAS REACHED A HEIGHT OF TWO (2) INCHES AND BEFORE BMP REMOVAL.
19. DEQ MUST APPROVE OF ANY TREATMENT SYSTEM AND OPERATIONAL PLAN THAT MAY BE NECESSARY TO TREAT CONTAMINATED CONSTRUCTION DEWATERING OR SEDIMENT AND TURBIDITY IN STORMWATER RUNOFF.
20. SHOULD ALL CONSTRUCTION ACTIVITIES CEASE FOR THIRTY (30) DAYS OR MORE, THE ENTIRE SITE MUST BE TEMPORARILY STABILIZED USING VEGETATION OR A HEAVY MULCH LAYER, TEMPORARY SEEDING, OR OTHER METHOD.
21. SHOULD CONSTRUCTION ACTIVITIES CEASE FOR FIFTEEN (15) DAYS OR MORE ON ANY SIGNIFICANT PORTION OF A CONSTRUCTION SITE, TEMPORARY STABILIZATION IS REQUIRED FOR THAT PORTION OF THE SITE WITH STRAW, COMPOST, OR OTHER TACKIFIED COVERING THAT WILL PREVENT SOIL OR WIND EROSION UNTIL WORK RESUMES ON THAT PORTION OF THE SITE.
22. AFTER FINAL GRADING, SEED ALL DISTURBED SOIL AREAS.
23. AFTER STOCK PILE MATERIAL IS REMOVED FROM PAVED AREA SWEEP/CLEAN/VACUUM OIL FROM PAVEMENT

- LEGEND:
- STS STORM SEWER LINE
 - CATCH BASIN
 - MANHOLE
 - SILT FENCE LINE
 - 21' MAJOR CONTOUR ELEVATION
 - 20' MINOR CONTOUR ELEVATION
 - 21' EXISTING MAJOR CONTOUR ELEVATION
 - 20' EXISTING MINOR CONTOUR ELEVATION

PORT OF PORTLAND PORTLAND, OREGON										REGISTERED PROFESSIONAL ENGINEER 15.104 DEAN R. NORLIN JULY 25, 1990 OREGON		DESIGNED BY: D. NORLIN DRAWN BY: C. BIELANSKI CHECKED BY: D. BREEN DATE: 06/19/2012 SCALE: 1" = 50'		TERMINAL 4 PIER 1 SITE PREPARATION EROSION CONTROL PLAN					
20120021 DESIGN NUMBER										101739 PROJECT NUMBER		EXP: 12/31/2012		SUBMITTED BY: DEAN NORLIN PROJECT ENGINEER		TYPE: PC DRAWING NO: T4 2012-4		4/5 (C-4)	
NO. DATE BY REVISIONS CKD APPVD										NO. DATE BY REVISIONS CKD APPVD									
1 08/15/12 CPB C.O.P. PERMIT																			



101739
PROJECT NUMBER



5/5 (C-5)